The Concept of Fit in Strategy Research:
Towards Verbal and Statistical Correspondence

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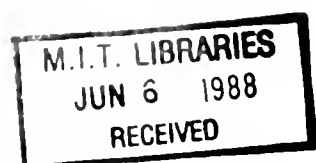
N. VENKATRAMAN

Massachusetts Institute of Technology
E52-553, Sloan School of Management
Cambridge, MA   02139
(617) 253-5044

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Abstract

Strategic management relationships are increasingly specified by invoking a general conceptualization of 'fit' (alternately termed as contingency, congruency, coalignment, consistency, etc.), but with inadequate correspondence between theoretical statements and operationalization schemes. This paper identifies six different perspectives -- fit as moderation; fit as mediation; fit as matching; fit as gestalts; fit as profile-deviation; and fit as covariation -- each implying distinct theoretical meanings and requiring the use of specific analytical schemes. This highlights the isomorphic nature of the correspondence between a particular conceptualization and its testing scheme(s), but, it appears that researchers have used these perspectives interchangeably, often invoking one perspective in the theoretical discussion and employing another within empirical research. Since such a research practice considerably weakens the critical link between theory-development and theory-testing, this paper argues for increased explicit linkage between the verbalization of theoretical propositions and their operational tests in strategic management research.

Key Words: Strategic management research; Contingency Theory; Fit; Theory-building and theory-testing.

Introduction

The concept of 'fit' has served as an important building block for theory construction in several areas of management research (Aldrich, 1979; Fry & Smith, 1987; Galbraith, 1977; Katz & Kahn, 1966; Lawrence & Lorsch, 1967; Thompson; 1967; Van de Ven & Drazin, 1985; Woodward, 1965) including strategic management research (Chakravarthy, 1982; Jauch & Osborn, 1981; Miles & Snow, 1978; Snow & Miles, 1983; Venkatraman & Camillus, 1984). However, a major problem in testing theories rooted in this concept lies in the lack of corresponding schemes for its operationalization and statistical testing. Thus, while it is not uncommon for theoreticians to postulate relationships using phrases such as 'matched with,' 'contingent upon,' 'consistent with' or more simply, 'fit,' 'congruence,' or 'coalignment,' precise guidelines at translating such verbal statements to the analytical and observational level are seldom provided. Consequently, researchers performing empirical tests often implicitly choose an available (often, convenient) mathematical form, and perform statistical tests without really examining the validity of the assumptions underlying their choice of operationalization (see Drazin & Van de Ven, 1985; and Schoonhoven, 1981 for exceptions).

Poor operationalizations give rise to problems of "methodological [in]validity" (Brinberg & McGrath, 1982), and could seriously limit the use of fit as a central concept for theory construction in strategic management. Specifically, a lack of correspondence between the conceptualization (of fit-based propositions) and its mathematical formulation (and statistical testing) weakens the link between theory-building and theory-testing (Blalock, 1965), and could be a major reason for inconsistent results in research streams rooted in this concept. Indeed, Galbraith and Nathanson's

following observations nearly a decade ago is equally valid today: "although the concept of fit is a useful one, it lacks the precise definition needed to test and recognize whether an organization has it or not" (1979; p. 266). In a similar tone, Van de Ven has argued that inadequate attention to specifying the form of fit could fundamentally alter the meaning of the theory itself (Van de Ven, 1979; Van de Ven & Drazin, 1985).

This paper is developed on the following premise: (a) the concept of 'fit' is central to both theoretical discussions and empirical research in strategic management; (b) its role in strategy research is severely handicapped by the absence of appropriate linkages between the conceptual domain of theory-building (verbalizing fit-based relationships) and the operational domain of theory-testing (i.e., statistical testing of such relationships); and (c) although several general discussions on the operationalization of fit exist (see especially, Drazin & Van de Ven, 1985; Joyce, Slocum, & Von Glinow, 1982; Miller, 1982; Schoonhoven, 1981), they neither address several issues of fit that are particularly relevant to strategy research nor focus on the array of statistical testing issues central to their use in empirical research. Thus, this paper links the conceptualization of fit-based propositions with the statistical tests of such propositions by highlighting that several alternate conceptualizations (with differing theoretical content) of fit exist within strategic management, and that they imply specific operational and testing schemes. The aim is to call attention to the isomorphic nature of the correspondence between a particular conceptualization and its testing scheme(s), and to contribute to the critical link between theory-building and theory-testing.

Alternative Perspectives of Fit in Strategic Management

Following Mohr (1982), strategic management research studies can be divided into two broad paradigms -- the 'process' paradigm; and the 'variance' paradigm. The former is characterized by the research studies of Mintzberg (1978), Mintzberg and Waters (1985); Miles and Snow (1978), and Burgelman (1983). The distinguishing characteristics lie in their ability to describe and explain the process of strategy formation (Mintzberg & Waters, 1985; Miles & Snow, 1978), and internal corporate venturing (Burgelman, 1983) rather than explain the variance in the dependent variable (say, performance) using a set of theoretically-related independent, explanatory variables (say, strategic choice variables).

In contrast, a growing number of studies subscribe to the 'variance' paradigm and aim at theory-testing through confirmation/disconfirmation of a specific array of hypotheses. For instance, several PIMS-based research seek to explain variations in business performance through a set of variables reflecting both strategic resource deployments as well as environmental characteristics (see for instance, Hambrick, 1983; Prescott, 1986).

Within the latter paradigm, one can distinguish between the 'main effects model' and the 'fit model.' The former seeks to maximize the variance explained by the chosen set of variables in terms of their collective explanatory power. In contrast, the fit model is less concerned with the overall explanatory power of the equation, but more on the significance of the term that specifically reflects the fit between or among a set of variables. The ensuing discussion focuses on the general 'fit model' which can be specified in a multitude of ways in empirical research following the variance paradigm.

The conceptualizations (and tests) of fit-based relationships in strategy research can be parsimoniously classified into the following six perspectives:

(a) fit as moderation;

(b) fit as mediation;

(c) fit as matching;

(d) fit as gestalts;

(e) fit as profile-deviation; and

(f) fit as covariation;

This paper is organized as follows: each perspective is discussed independently in terms of the central issues of conceptualizations and statistical testing. Subsequently an organizing framework is developed to map them to highlight their interrelationships, with a view to develop implications for future research.

Perspective One: Fit as Moderation

<u>Conceptualization</u>. A general axiom is that no strategy is universally superior irrespective of the environmental and/or organizational context. Consequently, the contingency perspective has dominated our thinking (Hofer, 1976; Steiner, 1979; Harrigan, 1983; Ginsberg & Venkatraman, 1985), operationalized within a moderation (i.e., interaction) perspective. As noted by Schoonhoven: "when contingency theorists assert that there is a relationship between two variables... which predicts a third variable...., they are stating that an <u>interaction</u> exists between the first two variables" (1981; p.351), thus highlighting the popularity of the moderation perspective in organizational research.

Moderation perspective specifies that the impact of a predictor variable on a criterion variable is fundamentally dependent on the level of a third variable, termed as the moderator. Thus, the fit between predictor and moderator is a significant determinant of performance. A moderator is viewed as 'either a qualitative (e.g., different types of environment, stages of

product life cycle, or organizational types) or a quantitative (e.g., degree of autonomy, or competitive intensity) variable that affects the direction and/or the strength of the relation between an independent or predictor variable (e.g., a strategy characteristic) and a dependent variable (e.g., performance). A formal representation is that a variable Z is a moderator if the relationship between two (or more) variables, say X and Y, is a function of the level of Z, which is mathematically represented as:

$$Y = f(X, Z, X.Z) \hspace{4cm} (1)$$

where (for illustrative purposes), Y = performance, X = strategy, and Z = the contextual variable that is to be 'fitted' with strategy for performance improvement. Figure 1 is a schematic representation of this perspective.

INSERT FIGURE 1 ABOUT HERE

Equation (1) is typically tested through (a) the subgroup analysis, and/or (b) the moderated regression analysis (Arnold, 1982; Sharma, Durand, & Gur-Arie, 1981). In the subgroup analysis, the sample is split into groups based on either X or Z. When the subgroups are defined based on the contextual variable (Z), such as different environmental types, the focus is mainly on examining strategy-performance relationships across environments (e.g., Prescott, 1986). Alternatively, the subgroups could be defined using different types of strategy with the relationship between the contextual variable (Z) and performance (Y) examined for possible moderating effects of different strategy types (X). The former tests for the moderating role of the context on strategy--performance relationships, which differs from the latter that focuses on the moderating role of strategy on the context--performance relationship. Irrespective of the type of sub-grouping, the aim is to examine the impact of strategy-context fit on performance, and the moderation

hypothesis is supported when statistically significant differences exist in the correlation coefficients across the groups[1].

The complementary moderated regression analysis (MRA) is the most common approach for testing fit-based relationships in strategic management research (e.g., Gupta & Govindarajan, 1984; 1986; Hitt, Ireland, & Palia, 1982; Hitt, Ireland, & Stadter, 1982; Prescott, 1986). The use of MRA can be represented through a set of two equations as follows:

$$Y = a_0 + a_1X + a_2Z + e \tag{2}$$

$$Y = a_0 + a_1X + a_2Z + a_3X.Z + e \tag{3}$$

The moderation hypothesis is supported if the unstandardized coefficient a_3 differs significantly from zero, attesting to important effects of the fit between (X) and (Z) on performance, (Y).

Analytical Issues. Recognizing that this is not a forum for an extensive primer on MRA (interested readers are referred to sources such as: Sharma, Durand, and Gur-Arie, 1981; Neter and Wasserman, 1982; Pedhazur, 1982; Cohen and Cohen, 1983), four critical analytical issues that directly relate to the testing of theoretical relationships are addressed: (a) the form versus strength of moderation; (b) the role and impact of multicollinearity; (c) the comparison of main versus interaction effects; and (d) the requirement of partialling out quadratic effects for testing the moderating effects.

The first issue is the distinction between the form versus strength of moderation. Cohen and Cohen (1975) note that:

> "Investigators should be aware, however, that the questions answered by these comparisons [of regression coefficients and correlation coefficients] are not the same. Comparisons of correlations answer the question "does X account for as much variation in Y in group E as in group F?" comparisons of regression coefficients answer the question

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[1] The differences in the correlation coefficients can be tested as a t-statistic when there are two groups (see Bruning and Kintz, 1987; pp.226-8); and as a chi-squared statistic for when there are multiple groups (see Arnold, 1982; p.152).

"does a change in X make the same amount of score difference in Y in group E as in group F?" (1975: p.66).

In this vein, Arnold (1982) distinguishes between the _form_ of moderation (indexed by the regression coefficient a_3 in equation 3) and the _strength_ of moderation (indexed by the differences in the correlation coefficients across the subgroups). More specifically, if the value of the correlation coefficient (r_{xy}) differs significantly across the subgroups, it supports the hypothesis of moderation of strength, while the statistical significance of a_3 in equation (3) supports the moderation of form. Given that a particular data set may support one and not the other (Arnold, 1982), it is critical that researchers explicitly articulate their conceptualization of moderation, and justify their choice of analytical technique (subgroup analysis versus moderated regression analysis) to ensure correspondence between their theoretical propositions and statistical tests. Recognizing this distinction, Prescott (1986) evaluated the nature of the moderating role of environment, and concluded that environments moderate the strength, but not the form of strategy-- performance relationship. The implication is that it is no longer adequate to theorize a general form of fit-based relationship (simply in terms of moderation) and treat MRA and subgroup analysis as substitutable analytical schemes for testing the proposition.

The _second_ analytical issue pertains to the role and impact of multicollinearity -- a statistical problem that arises when correlations between independent variables are extremely 'high,' producing large standard errors of regression coefficients, and unstable coefficients. This is a relevant issue for estimating equation (3) since the cross-product term (X.Z) is likely to be strongly correlated with X, and Z. Some researchers explicitly invoke multicollinearity as a reason for not testing fit within a moderation perspective (see Dewar & Werbel, 1979; Drazin & Van de Ven, 1985).

While we recognize the statistical estimation problems posed by multicollinearity, it is important to recognize that it is not problematic for establishing the _existence_ of moderation effects. For interval-level measurements, it has been shown that a simple transformation of the scale of origin reduces the level of correlation between the cross-product term $(X.Z)$ and the original variables $(X,Z)^2$. Such a transformation _does_ _not_ affect the test for the _unstandardized_ coefficient a_3, although it affects the tests for unstandardized coefficients, a_1, and a_2 as well as _all_ the standardized coefficients (see Southwood, 1978; pp. 1166-1167; 1199-1201). Thus, contrary to the call for rejecting MRA for testing fit due to multicollinearity problems (Dewar & Werbel, 1979; Drazin & Van de Ven, 1985; p.519), it is a valid analytical method for testing fit as moderation (see also Allison, 1977; Arnold & Evans, 1979). The implication is that if researchers conceptualize their theories within the moderation perspective, they should _not_ dismiss the use of MRA for multicollinearity reasons without evaluating this important property for interval-level measurement.

The _third_ issue pertains to the comparison of main versus interaction (fit) effects within the moderation perspective. For example, a researcher may be interested in the effects of chosen business-unit strategy on performance as well as _additional_ effects of the fit between strategy and administrative characteristics, such as structure (Chandler, 1962), systems (Lorange and Vancil, 1978), or managerial traits (Gupta, 1984). Such theorizations require the joint assessment of main and interaction effects, which can not be accomplished at an interval-level of measurement. As shown in note 2, testing for $a_3 = 0$ can not be accomplished along with tests

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^{2} Southwood (1978; p.1198) demonstrates that any equation $(X_1, X_2,, X_3=X_1.X_2)$ can be transformed into one $(X_1, X_2, X_3 =X_1.X_2)$, where $X_1 = (X_1+c)$, and $X_2 = (X_2+k)$; that is the two equations express the same surface in the three dimensions $(Y,X_1,$ and $X_2)$, except for a shift in the axes of X_1, and X_2. However, if the variables are measured using ratio scales, such a transformation alters the meaning of the measures and can not be applied.

for a_1 and a_2, given the arbitrary scale of origin for interval-level measurement. Thus, within a typical moderated regression analysis (with interval-level measurements), one can test for the <u>existence of interaction effects</u> but can not compare the relative influence of main and interaction effects because the standardized coefficients are meaningless. However, if it is possible to develop ratio scales for X, and Z, then one can compare their relative effects (Allison, 1977; Southwood, 1978; Friedrich, 1982). Thus, the implication is that if the theory calls for a comparison of main and interaction effects, the moderation perspective may be limited to those cases that accommodate ratio-levels of measurements.

The <u>fourth</u> issue focuses on the requirement of partialling out the quadratic effects of the original variables (X) and (Z) for establishing the presence (or, absence) of multiplicative effects. Southwood (1978) argued that to be sure that the relationship is one of interaction rather than parabolic curvilinearity, it is necessary to control by using the terms, X, Z, X^2, Z^2, and X.Z <u>simultaneously</u>. A test of the partial correlation between the dependent variable (Y) and (X.Z), after partialling out the effects of X, Z, X^2, and Z^2 provides support for multiplicative interaction, while tests of the partial correlation coefficients (i) between (Y) and (X^2), after partialling out the effects of X, Z, X.Z., and Z^2 and (ii) between (Y) and (Z^2), after partialling out the effects of X, Z, X.Z., and X^2 provide evidence of the occurrence of curvilinearity. A review of strategy and organizational research adopting the moderation perspective indicates that extant research has not incorporated such controls, which weakens the interpretations. It is hoped that future attempts at modeling fit as moderation reflects the need to rule out the rival explanation of plausible curvilinear effects of the original variables when establishing the existence of joint, multiplicative effects.

The use of the moderation perspective of fit is limited in at least two ways. One concerns the inability to separate the <u>existence</u> of fit from the

effects of fit. Recall that the statistical tests within this framework involves either the assessment of the significance of a_3 in equation (3) -- which is an indication of the effect of fit (depicted by the interaction term) on the criterion variable, Y -- or the difference in the correlation coefficients involving the dependent variable, (Y) across various groups defined by either (X) or (Z). Since the specification of fit as moderation is with reference to a criterion variable, its meaning is intricately tied to the specific performance variable, and may not be generalizable to other performance measures. Thus, if one is not interested in the performance effects of fit, but instead on the existence (e.g., incidence, or, proportion) of fit in different sub-samples, this perspective is inappropriate.

The second limitation pertains the inability to attach theoretical meanings to the interaction terms, especially involving (a) multiple sets of interactions and (b) higher-order interactions. The problem inherent in the multiple sets of interactions can be illustrated with reference to a study where strategy is measured using a set of n variables and environment is captured through a set of m variables, with each variable reflecting specific theoretical content. Then, the moderating effects of strategy and environment is specified in terms of a set of $(n \times m)$ interaction variables. However, this set may not collectively reflect the moderating effects because theoretically, relationships implied by the set of individual interaction components may not adequately represent the nature of systemic interaction, implying an error of 'logical typing' (Bateson, 1979; Van de Ven & Drazin, 1985).

Let us consider the study by Jauch, Osborn, and Glueck (1980), which examined the financial performance implications of the environment-strategy fit using a multiplicative (i.e., moderation) perspective. They modeled fit as a set of 72 interaction terms, but none of the 72 possible interactions were statistically significant at the $p < .05$ level. Should we interpret this result

as a rejection of the performance effects of environment-strategy fit (as they did) or note, more appropriately, that the empirical results do not support the hypothesis when tested using a moderation perspective. If we conclude the latter, then one should go further to question the appropriateness of this perspective to test the underlying theory. This is because one can argue that the moderation view of fit (viewed in terms of multiplying individual strategy variables and individual environmental variables) has little theoretical basis, and hence, it is not surprising that Jauch et al (1980) did not find any significant multiplicative effects. Indeed, a careful review of the research literature arguing for environment--strategy coalignment indicates that the proponents of this view (e.g., Andrews, 1980; Bourgeois, 1980; Miles and Snow, 1978) invoke the notion of fit rather metaphorically, and hardly specify the specific functional form of joint, multiplicative effects. It is the empirical researcher who has translated such a theoretical position into a moderation perspective for analysis.

The problem inherent in higher order interactions relate to the ambiguity in attaching any clear theoretical meaning to these terms. Although it has been shown (Allison, 1977) that the three-way interaction terms as well as higher-order terms are not susceptible to multicollinearity problems (for interval-level measurements), the inherent limitation is theoretical in nature rather than one of statistical estimation. This requires that researchers have to be particularly persuasive in attaching meaning to those terms than they would in the case of two-way interactions.

Given these critical limitations, it is important to recognize that as we strive to avoid the error of inappropriate linkage between the theoretical and the empirical domain, we should move away from viewing moderation as the only scheme to conceptualize fit, and treating the introduction of multiplicative terms in a regression analysis as the only means of testing for

fit-based relationships. Towards this end, other major perspectives are discussed below.

Perspective Two: Fit as Mediation

Conceptualization. The mediation perspective specifies the existence of a significant intervening mechanism (say, organizational structure) between an independent variable (say, strategy) and the dependent variable (say, performance). Thus, while moderation specifies varying effects of an independent variable on a dependent variable as a function of the moderating variable, this perspective specifies the existence of intervening (indirect) effects. Stated differently, this accommodates the case of a direct effect of an independent variable as well as a combinatory, indirect effects on performance.

Strategy researchers have embraced the moderation perspective more often than the mediation perspective, but the latter offers the capability to recognizes the differences in the various stages of a system of relationships. Our position is that neither is universally superior, and that the choice is to be explicitly predicated on theoretical considerations. For example, Hambrick, MacMillan, and Day (1982) treated relative market share as a moderator in their analysis of the effectiveness of strategies across the four cells of a business portfolio matrix -- which is consistent with the theory underlying the portfolio matrix. Alternatively, in examining the nature of the relationship (direct versus spurious) between market share and profitability, Prescott, Kohli, and Venkatraman (1986) treated market share as a mediator in a system of relationships between strategy and profitability across different environmental contexts. Both studies generally addressed the strategy -- market-share fit on performance using different theoretical and analytical perspectives.

Similarly, if one is embracing the classical industrial organization (IO) economics paradigm (Scherer, 1980; Porter, 1981) of Structure --> Conduct --> Performance to test the role (if any) of firm-level strategic actions in influencing the relationship between market structure characteristics and firm performance, one could use both perspectives with differing theoretical meanings. The mediation perspective decomposes the effects of market structure characteristics on firm-level performance into direct effects (i.e., performance levels attributable to domain choice, or corporate strategy) versus indirect effects (i.e., performance levels attributable to domain navigation, or competitive strategies). In contrast, the moderation perspective is useful to evaluate the differences in the relationships between strategy and performance across various environments (Prescott, 1986).

We view mediator as a variable that accounts for a significant proportion of the relation between the predictor and criterion. Stated formally, Z is a mediator of the probablistic relation $Y=f(X)$, if Z is a probablistic function of X (i.e., $Z=f[X]$) and Y is a probablistic function of Z (i.e., $Y=f[Z]$), where X, Z, and Y have different distinct theoretical content (see Roseboom, 1956). Figure 2 is a schematic representation of a simple mediational model involving three variables, where, Z (say, market-share level) acts as a mediating mechanism (fit) between X (say, strategic decisions) and Y (say, firm-level performance), and supported by the following set of equations:

$$Y = a_0 + a_1X + a_2Z + e \qquad (4)$$

$$Z = b_0 + b_1X + e \qquad (5)$$

INSERT FIGURE 2 ABOUT HERE

A comparison of Figures 1 and 2, as well as equations (2) and (3) versus (4) and (5) reveal the important distinction between the two perspectives discussed thus far. While the moderation perspective is generally

less-restrictive in distinguishing between the independent variable and the moderating variable, a more precise distinction between the independent variable and the mediating variable is required within the mediation perspective. This is because the system of equations is directly dependent on the theoretical specification of the nature of relationships, especially the ordering of the variables.

<u>Analytical Issues</u>. The tests of fit as mediation is typically carried out within a path-analytic framework (for details, refer sources such as: Alwin & Hauser, 1972; Blalock, 1971; Duncan, 1971; Heise, 1975; Kenny, 1979), and two issues are important: (a) distinction between complete versus partial mediation; and (b) the test for the performance impacts of fit.

The <u>first</u> issue on the distinction between complete versus partial mediation has important theoretical implications for strategy research, as it has potential to address the dilemma on the relative importance of market structure factors and strategic choice decisions. Let us consider Figure 2. If the coefficient a_1 in equation (4) is not statistically different from zero, the strongest support for the mediating effects of Z is obtained. This implies that the presence of Z is <u>necessary</u> for the transmission of effects of X on Y, and is termed as the complete mediational model. Thus, in testing theoretical propositions rooted in the Market Structure --> Conduct --> Performance paradigm, the implication is that firm-conduct (i.e., strategy) plays a critical role in translating market structure opportunities to firm-level performance. On the other hand, if the coefficient a_1 is not zero, there exists some <u>direct</u> effect between X and Y, and some <u>indirect</u> effect between X and Y through Z, implying a partial mediational model. The implication is that partial effect is obtained due to market structure (i.e., domain definition or choice, reflecting the famous question -- "what is our business?") and partial effect due to strategic decisions <u>given</u> the market structure characteristics (i.e., domain navigation, reflecting the impact of

"how do we compete?"). Such tests directly address the theoretical position that firm performance is a function of structural factors as well as strategic choice (e.g., Andrews, 1980; Bourgeois, 1980; Schendel & Hofer, 1979). Finally, if the direct effect, a_1 is much stronger than the indirect effects, the implication is that there is insignificant role for firm-level conduct (i.e., strategic choice). Thus, this perspective provides a direct scheme to test interesting theoretical questions on the role and impact of strategy.

The second issue is the test for the performance effects of fit. This is important given that most theories seek to specify performance effects attributable to fit. Thus, the usefulness of this perspective is dependent on the availability of test statistic for the effects of fit (as mediation). In other words, as the test for a_3 in equation (3) provided evidence for moderating effects, we need a corresponding test for fit as mediation. However, this issue is complicated given that the impact of fit is given by the product of two path-coefficients ($b_1.a_1$). Based on Simon-Blalock decompositional technique (see Duncan, 1972), the following equation can be specified[3]:

$$r_{xy} = a_1 + a_2.b_1 + \text{spurious effects} \qquad (6)$$

where (r_{xy}) is the observed zero-order correlation between X and Y[4]. The relative proportion of the two effects -- indirect ($a_2.b1$) versus direct ($a1$)-- provides an index of the relative effect of fit (namely, indirect effects) versus the direct effects. More formal, statistical corroboration is provided through a test of the statistical significance of the indirect effects through the mediator. Since this involves testing a product of two regression coefficients, a standard t-test cannot be adopted. Hence, we use an

[3] See Prescott, Kohli, and Venkatraman (1986) for a strategy research study that uses this technique for estimating the various coefficients.

[4] It is useful to restrict this discussion to those cases, where the zero-order correlation is statistically significant, and 'sufficiently large' to make the decompositions worthwhile.

approximation due to Sobel (1982) as follows:

$$t = (a_1*b_2)/sqrt((b_2^2*se_{a2}^2) + (a^2*se_{b2}^2))$$

where a_2 and b_1 are as defined earlier, and (se) refers to the standard error of estimates.

Before we conclude the discussion on this perspective, it is important to note that while the discussion focused on a simple system of relationships involving three variables, it can be conceptually extended to multiple variables (see Duncan, 1972; Heise, 1975; Kenny, 1979), although estimation and interpretation problems could be more pronounced.

Perspective Three: Fit as Matching

<u>Conceptualization</u>. This perspective is invoked for those strategy conceptualizations that view fit as a <u>theoretically defined</u> match between two theoretically-related variables. A major point of departure from the previous two perspectives is that fit is specified without reference to a criterion variable, although one could subsequently examine its effect on a set of criterion variables. Stated differently, a measure of fit between two variables is developed independent of any performance anchor, unlike the previous two perspectives. Let us consider Chandler's (1962) classical thesis that a diversification strategy requires a multi-divisional structure, while a geographical expansion strategy requires field units; and that the absence of such a match leads to administrative inefficiency. Thus, the measure of strategy--structure fit can be derived without reference to any particular view of administrative efficiency. Such a theoretical proposition is most appropriately operationalized within a matching perspective (see Rumelt, 1974; Grinyer, Yasai-Ardekani, and Al-Bazzaz, 1981), and independent of the specific conceptualization of performance. Similarly, Chakravarthy (1987) defined fit within a planning system context as existing when the planning system in use matches the required ideal system to test whether such a match enhances system performance.

Analytical Issues. The matching perspective has been supported by three somewhat related analytical schemes: (a) the deviation score analysis; (b) the residual analysis; and (c) the analysis of variance (ANOVA).

The deviation score analysis is based on a premise that if one is interested in quantifying the degree of match between two variables, then the absolute difference between the standardized scores of two variables is an indication of the lack of fit (see for instance, Alexander & Randolph, 1985; Bourgeois, 1985). For instance, in the three variable system discussed earlier, $|X-Z|$ is an indication of the lack of fit between X and Z, and the performance implications of fit is tested by examining the impact of this variable on performance. The formal specification of the equation is as follows:

$$Y = a_0 + a_1X + a_2Z + a_3(|X-Z|)^{-1} + e \qquad (7)$$

If the coefficient a_3 is positive, and statistically significant in equation (7), then a hypothesis of performance effects of fit is supported.

This analysis has intuitive appeal, but the problems pertaining to the difference scores (Johns, 1981) are to be recognized. These include (a) potential unreliability of the fit measure -- since the reliability of a difference score $|X-Z|$ is less than the average reliability of its component parts (X) and (Z); (b) possibility of spurious association with an external variable -- even if the difference score has acceptable reliability, it may be spuriously related to the criterion variable through the effects of the original components (X) and (Z); and (c) generally weak discriminant validity -- given that the transformed variable may not be differentiable form its component variables. Since researchers employing difference scores to measure fit within this perspective do not discuss their response to such issues, it is not possible to systematically assess the impact on research results, but it is hoped that future studies devote increased sensitivity to the potential problems in the use of difference scores.

The residual analysis reflects the Dewar and Werbel (1979) operationalization of fit. In this method, the residuals from the regression of one variable (say, X) on the other (say, Z) are used to reflect fit, which can be subsequently related to criterion variable, (Y). According to its proponents, the main advantages are "one can simultaneously test both universalistic and contingency predictions... (and) one can obtain some idea of the magnitude of the different effects by comparing the coefficients" (1979; p. 436). But, in arguing for this approach, they reject the multiplicative approach for multicollinearity reasons -- which have been shown earlier in this paper to be ill-founded. Our position is that this analysis is appropriate to test fit-based relationships -- if (a) the underlying theory is conceptualized as deviation, and (b) one can demonstrate that the limitations of deviation scores are not serious. It is, however, clearly inappropriate to conceptualize fit as moderation and then reject MRA and favor the residual analysis, because they are not directly interchangeable -- given the fundamental differences in the underlying theoretical positions.

However, the residual approach has the following limitations (Dewar & Werbel, 1979; Miller, 1982) that are to be recognized: (a) the problems of choosing an appropriate base line model to calculate the residuals; (b) the confounding of error variance in residuals, in addition to measurement error; (c) the arithmetic sign of the residuals; and (d) the need to distinguish between the residuals of X on Z, and the residuals of Z on X, although they both reflect the fit between X and Z. At a minimum, researchers employing this analysis should discuss the relevance and implications of these issues in their specific research context.

The third analytical approach within the matching perspective is the analysis of variance (ANOVA). This scheme is typically viewed as tests for interaction effects, but Joyce, Slocum, and Von Glinow (1982) developed useful tests of fit reflecting the matching perspective. They distinguish

between three forms of fit (or, congruence) -- effect, general, and functional -- where the general congruency model hypothesizes interaction effects, but emphasizes the similarity and matching levels of independent variables. A parenthetical advantage of this analytical scheme is that competing perspectives (e.g., moderation versus matching) of fit can be tested within a common analytical framework (see Joyce et.al., 1982).

The three perspectives thus far share one common feature, namely that they are appropriate for specifying bivariate fit (i.e., fit specified in various functional forms between two variables), although the second perspective has the potential to accommodate a larger system of relationships. In contrast, the next three perspectives are appropriate for the specification and testing of fit among multiple variables simultaneously.

Perspective Four: Fit as Gestalts

Conceptualization. The raison d'etre for this perspective is derived from Van de Ven's (1979) articulation of one of the meanings of fit as: "that characteristics of environmental niches and organizational forms (that) must be joined together in a particular configuration to achieve completeness in a description of a social system -- like pieces of a puzzle must be put together in certain ways to obtain a complete image. Here, no direct causation is implied ... and a conceptual explanation of "fit" is found in a hierarchical theory on the holistic nature of an open social system." (1979; p.323). A similar call is made by Miller (1981), who reacted against the dominance of bivariate contingency perspectives and called for a movement towards the development of gestalts.

The need for a gestalt view is highlighted by Child's note of caution on the plausibility of internal inconsistencies (or, mutually conflicting directions) among multiple pairwise contingencies. He remarked: "What happens when a configuration of different contingencies are found, each

having distinctive implications for organizational design?" (1975; p.175). A partial solution to this problem may be found in the development of gestalts -- which can be viewed as a logical extension of the bivariate fit perspective through a multi-tiered taxonomical approach (Hambrick, 1984).

The role of gestalts in reflecting the multivariate fit is best described in Miller's (1981) terms as follows: "Instead of looking at a few variables or at linear associations among such variables we should be trying to find frequently recurring clusters of attributes or gestalts " (1981; p.5). Along similar lines, Miller and Friesen noted: "Archetypes appear to represent a set of relationships which are in a temporary state of balance. the .. situations which are described seem to form a number of gestalts. There is something holistic and ordered about the pattern of ....attributes (1977; p.264), and could provide useful insights into a powerful concept of equifinality -- 'feasible sets of internally consistent and equally effective configurations.'

Analytical Issues. The analysis of fit as gestalts raises two issues that need attention, namely (a) the descriptive validity of the gestalts; and (b) the predictive validity of gestalts.

The descriptive validity requires that the gestalts obtained be interpretable in terms of the theoretical positions implied by fit. This is especially important since most analytical schemes available for gestalt development are inductive, which has given rise to this activity being called as a 'fishing exercise.' Miller (1981) argues that these gestalts are "relatively few and very different from one another, both in terms of the scores of, and relationships among, variables," but it is important to underscore that the types and characters of the gestalts are sample-specific, which require that external validity criteria (e.g., cluster stability; robustness and generalizability to a different sample or population) should be satisfied.

Further, there exists a subtle, but nevertheless, important distinction between the treatment of fit as gestalts and strategy taxonomies. The latter

represents an empirical identification of naturally-occurring strategy types (Galbraith & Schendel, 1985; Hambrick, 1983; Miller & Friesen, 1984) -- which do not invoke the concept of internal congruence, except indirectly to name the gestalts. The selection of the underlying variables for taxonomic inquiry is guided by the need to balance parsimony and exhaustiveness of coverage. In contrast, the specification testing of fit as gestalts requires a more careful enumeration of the underlying dimensions such that the gestalts can be ordered along their levels of fit or congruence. For example, Miles and Snow's (1978) theory of strategic adaptation is rooted in the notion of internal consistencies among three problem domains (entrepreneurial; engineering; and administrative) and it is the pattern of coalignment that results in the four strategy types (prospectors, defenders, analyzers, and reactors). A rigorous test of this theory requires the use of the three problem domains as a basis to develop four gestalts that can be interpreted in the light of their theory. This ensures a tighter linkage between the underlying theory, choice of dimensions, as well as the interpretations of the clusters in the light of the theory. Thus, although the Miles and Snow (1978) typology is a popular one, it is unfortunate that its use in empirical research studies has not yet been explicitly predicated on the pattern of fit among the three dimensions.

The predictive validity is important given our interest in (a) establishing performance implications of congruency; and/or (b) demonstrating the existence of generic strategy types or multiple configurations of equally successful strategies (i.e., equifinality). For instance, Etzioni argued that "Congruent (organizational) types are more effective than incongruent types" (1961; p.14, emphasis added); and Child reported that the high performing organizations had internally consistent structural configurations, which were absent in poorer performing organizations. If such propositions are to be directly tested within a gestalt perspective, the challenge is to incorporate

performance variable(s) into the analysis. For this task, we concur with Hambrick's suggestion of identifying subsamples of high- and low- performing businesses to identify profiles of fit within each subsample. This enables one to (a) develop distinct profiles of fit across the performance categories; and (b) assess the possibility of discovering patterns of equifinality within low- and high- performing businesses. Such an approach enabled Hambrick (1983) and Miller and Friesen (1978) to isolate generic 'successful' and 'unsuccessful' gestalts.

In summary, the conceptualization of fit as gestalts is powerful in terms of its ability to retain the holistic nature of coalignment, and is ably supported by an array of analytical methods of numerical taxonomy. The challenge for strategy researchers is to carefully articulate the theoretical position of internal congruence and employ appropriate numerical methods such that the analytical exercise is not an end in itself, but is viewed as a means to test the theory of multivariate congruence.

Perspective Five: Fit as Profile-Deviation

Conceptualization. While gestalts reflect the degree of internal congruence among a set of variables that form the taxonomy, this perspective views fit as the degree of adherence to an externally-specified profile, and is akin to what Van de Ven and Drazin (1985) term as 'pattern analysis.' The role and use of this perspective is best introduced through the following case: let us suppose that we can specify an ideal strategy profile (say, in terms of the level of resource deployments along a set of strategy dimensions) for a particular environment, then a business unit's degree of adherence to such a multi-dimensional profile will be positively related to performance, given its high level of environment--strategy coalignment. Conversely, the deviation from this profile implies a weakness in environment--strategy coalignment, resulting in a negative effect on

performance. Figure 3 is a schematic representation of this perspective using six (illustrative) dimensions of strategy.

This perspective is useful for testing the effects of environment -- strategy coalignment (Andrews, 1980; Bourgeois, 1980; Hofer and Schendel, 1978; Miles and Snow, 1978) in the sense that deviations in strategy from an environment-specific 'ideal' profile should be negatively related to performance. Venkatraman and Prescott (1988) argued that this perspective best reflects the theoretical proposition of performance effects of environment--strategy coalignment, and employed it on a sample of PIMS-based businesses across eight environments over two different time-periods. They found strong, and consistent support for their hypotheses, since deviations in resource allocation patterns from corresponding environment-specific profiles were strongly (negatively) related to performance.

INSERT FIGURE 3 ABOUT HERE

Analytical Issues. Three critical issues interplay between the conceptualization of fit as profile-deviation and its tests: (a) the development of the 'ideal profile,' (b) differential weights for the dimensions in the profile development; and (c) the need for a baseline model to assess the power of the test.

The first issue focuses on the approach to the development of the profile that serves as the benchmark for calibrating the strategies of the businesses in a study. Two obvious choices exist. One is a theoretical specification of the profile along a set of dimensions that can be argued to be most appropriate for a particular environment. While intuitively appealing, the operational task of developing such a profile with numerical scores along

a set of dimensions is difficult[5].

The other option is to empirically develop this profile (see Drazin & Van de Van, 1985; Ferry, 1979; Venkatraman and Prescott, 1988) using a calibration sample. In a strategy research context, Venkatraman and Prescott (1988) developed their profile of ideal strategic resource deployments using the mean scores of a calibration sample -- defined as the businesses that lie in the top 10% on the performance scale within an environment -- that was subsequently not used for the study sample. Given the importance of arriving at a valid 'ideal profile' it is important to explore the use of hold-out sample, jackknifing for different proportions of the sample used for calibration purposes, as well as subsample replications to increase the robustness of the profile specified for calibration purposes.

The second issue concerns the development of a multi-dimensional profile with either equal weights to the dimensions or differentially weighing the dimensions based on their relative importance to the context. Drazin and Van de Ven (1985) adopted the unweighted scheme, but Van de Ven and Drazin note that the assumption of equal weights "can be relaxed by introducing the possibility of differentially weighing the importance of deviation .. in determining performance." (1985; p.351). For strategy research, we argue that the assumption of equal weights to all the underlying strategy dimensions is untenable since an effective package of strategic resource deployments should reflect differential emphasis depending on the importance of a particular dimension to the particular environment. Adopting such a view, Venkatraman and Prescott (1988) derived the weighing scheme from the beta weights of the regression equations using the array of strategy variables on performance for each environment in the calibration sample.

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[5] For example, Porter (1980) provides a conceptual base for identifying the ideal strategies for different generic environments, but it is not possible to translate these verbal statements into numerical scores of ideal resource deployments for each environment.

The third issue pertains to the power of the test, which requires the specification of a baseline model to demonstrate that the predictive power of the measure of coalignment (calculated as a weighted euclidean distance using the profile of the calibration sample) is significantly better than a measure calculated as deviation from a random profile. This is a non-trivial issue and is best explained by drawing an analogy to the discriminant analysis -- where the power of the discriminant function is demonstrated by its ability to discriminate among certain groups using a set of discriminating variables. For this purpose, the classificatory accuracy of the model is compared against a 'chance' or 'naive' model (Morrison, 1969). In Van de ven and Drazin's (1985) pattern analysis, a negative and significant correlation coefficient between the coalignment measure and the criterion serves to demonstrate the performance effects of coalignment. However, more powerful tests that discount other plausible rival hypothesis (say, one that argues that deviations from any random profile would exhibit significant negative correlation coefficient) are needed as we begin to employ this perspective in empirical strategy research.

Perspective Six: Fit as Covariation

Conceptualization. While fit as profile-deviation signifies adherence to an externally-specified profile, this perspective views coalignment as reflected in the pattern of covariation among a set of dimensions. Indeed this is a response to an oft-repeated call to develop notions of megastrategy (Mintzberg, 1978) or to treat strategy as "a pattern or stream of major and minor decisions" (Miles & Snow, 1978). The notions of 'megastrategy' and 'pattern of decisions' are best represented as covariation among the constituent dimensions rather than as any of the earlier perspectives (with the possible exception of gestalts). This is because, internal consistency requires the explication of the underlying logical linkage among the

dimensions. General linear models like the regression analysis are of limited use given that they miss "the concept of a central thread or internal logic underlying a strategy" (Hambrick, 1980) as the "regression coefficient may have statistical significance, but may indicate no apparent logical linkage among the various independent variables" (1980; p.571).

The concept of megastrategy is predicated on the notion of internal consistency in strategic resource deployments (Mintzberg, 1978) and is best operationalized as covariation among the various dimensions of resource deployments. The theoretical support for such a view is derived from Weeks' (1980) view of operationalizing the notion of general intelligence as the pattern of covariation among the constituent dimensions of human intelligence. It differs from the fourth perspective (fit as gestalts) in the sense that it has the capability to specify the notion of fit theoretically (as an unobservable construct) rather than derived empirically as an output of numerical taxonomic methods. Stated differently, it follows a deductive approach to the specification and testing of fit as opposed to the inductive approach reflected in cluster analysis. Thus, while the fourth perspective is appropriate in the early stages of theory development, this is more appropriate as theories get refined by successively building from prior theorizing and empirical results.

Analytical Issues. Two critical issues emerge in the specification and testing of fit as covariation. These are: (a) the exploratory versus confirmatory approach to the specification of fit; and (b) the tests of the existence and impact of fit.

The distinction between exploratory and confirmatory approach is an age old one in social science research. The operationalization of fit as covariation is rooted in the basic principles of factor analysis -- that seeks to explain covariation among a set of indicators in terms of a smaller set of factors (i.e., first-order factors) and explain the covariation among the first-

order factors in terms of second-order factor(s). Fit as covariation is specified as a second-order factor, where the first-order factors represent the dimensions to be coaligned (see Venkatraman, 1986).

Given the basic choice in exploratory versus confirmatory specification, the pattern of covariation can be modeled either as exploratory factor analysis (EFA) or confirmatory factor analysis (CFA). The specification of second-order factor within EFA involves a common factor analysis with oblique rotations with correlations among the first-order factors used to examine the possibility of second-order factors (see Cattell, 1978; Chapter 9 for details). In contrast, the CFA (see Joreskog and Sorbom, 1979) seeks to test one (or, more) theoretically-specified second-order factor(s) against the observed data. Thus, unlike EFA that uses predefined mathematical criteria to determine the optimal rotation which may result in uninterpretable theoretical meaning, the CFA provides a basis to explicitly evaluate a second-order factor model against an alternative model -- one that may, for example, specify only inter-correlated first-order factors.

Given the relative benefits of CFA over EFA for theory testing purposes (see Mulaik, 1972; Joreskog and Sorbom, 1979; Bagozzi, 1980), and the need to distinguish this perspective from other inductive perspectives (e.g., gestalts as in perspective four), the use of CFA is preferred over EFA in modeling fit as covariation. Figure 4 is a schematic representation of this perspective, where Figure 4(A) specifies the base model of direct effects of four dimensions on a criterion. In Figure 4(B), an alternate specification is adopted, which explicitly specifies the covariation among the four dimensions reflecting an internally-consistent business strategy, which in turn has an effect on the criterion. The coalignment among them is formally specified as an unobservable theoretical construct at a higher plane than the individual functional areas. This construct has no directly observable indicators, but derives its meaning through the first-order factors that are directly

operationalized using observable indicators reflecting the resource allocation patterns to the functions (say, indicative of functional strategy).

INSERT FIGURE 4 ABOUT HERE

The second issue pertains to the tests of the impact of fit modeled as covariation. Without getting into the details of model estimation within a LISREL framework (readers are directed to Bagozzi & Phillips, 1982; Joreskog & Sorbom, 1978; 1979), we note that two complementary test statistics can be used: (a) a comparison of the coefficients of determination; and (b) the calculation of the Target Coefficient (Marsh & Hocevar, 1985). Within CFA, a common approach for model comparison is to use the difference in chi-squared statistic (which follows a chi-squared distribution) if the two models are nested, namely that one is a subset of the other. Since the two models (4a & 4b) are not nested, a chi-square difference test criterion (Joreskog, 1971) cannot be employed here. However, following Marsh and Hocevar (1985), we note that the second order factor model is merely trying to explain the covariation among the first-order factors in a more parsimonious way. Consequently, even when the second order factor model is able to explain effectively the covariation among the first order factors, the goodness of fit can never exceed that of the first order factor model. Marsh and Hocevar (1985) propose a Target coefficient (T) that reflects the ratio of the chi-square of the first-order model to the chi-square of the second-order model, and has an upperbound of 1.00. A value close to 1 can be used to support the covariation model in preference to the main effects model, and can be interpreted similar to the Bentler and Bonett (1980) delta index, until the distributional properties of (T) are established.

Towards Verbal and Statistical Correspondence

Mapping the Six Perspectives

The discussion thus far sought to isolate the key distinguishing characteristics of the six dominant perspectives of conceptualizing and testing fit within strategic management research. While they imply differences, it is important to recognize that they are interrelated. Hence, an organizing framework is developed based on two dimensions -- (a) the degree of specificity of the theoretical relationship; and (b) the treatment of fit. The first dimension reflects the degree of precision that can be brought to bear on specifying the functional form of the relationship. For example, when a strategy researcher conceptualizes the relationship between two variables along a moderator framework, the degree of specifgication of the functional form is more than a case where a researcher conceptualizes that a set of variables are internally-connected in some unspecified way to form gestalts. The second dimension reflects another critical theoretical (and empirical) issue of specifying fit either in terms of its link to a criterion variable (e.g., the casee of moderation) versus separate from a criterion (e.g., covariation or matching perspectives). Figure 5 maps the six perspectives along these two dimensions to highlight their relative positions within the broader scheme of available approaches to conceptualizing and testing this complex phenomenon.

In addition, these six perspectives are compared along several key characteristics in Table 1. It is intended to highlight the fundamental differences in themes such as: the underlying conceptualization of fit, the verbalization of an illustrative theoretical proposition, the number of variables in the specification of fit, the nature of measurement of fit, analytical schemes for testing fit, as well as illustrative references.

INSERT TABLE 1 AND FIGURE 5 ABOUT HERE

The Concept of Fit: Beyond a General Metaphor

Future theorizing in strategic management is dependent on a movement away from treating fit as a general metaphor that has universal applicability. Van de Ven noted in his review of Aldrich's (1979) book:

> "Central to the population ecology model (as well as to contingency theories in general) is the proposition that organizational forms must fit their environmental niches if they are to survive. There are at least four different conceptual meanings of "fit" in this proposition, each of which significantly alters the essence of the theory" (1979; p. 322).

As this paper has argued, the same criticism applies equally well to many strategy propositions and/or theoretical statements that have invoked fit at a rather metaphorical level, with little guidance at operationalization (see Bourgeois, 1980; Chakravarthy, 1982; Jauch & Osborn, 1981; Snow & Miles, 1983). Recognizing the interdependence between theory-building and theory-testing, phrases like "congruence", "fit" or "alignment" should be accompanied by descriptive guidelines that, at minimum, specify their specific functional forms(s).

We need to move beyond treating fit as a general metaphor that can be used to signify a wide array of meanings such as contingency, congruency, matching, interactive effects, etc. This paper has provided a classificatory scheme (Figure 5 and Table 1) rooted in six different perspectives of fit -- each implying a distinct theoretical position as well as specific set of analytical frameworks. The expectation is that this classification would at least serve as a common reference point for discussions, and that future work will exhibit increased sensitivity to the widely-differing theoretical and empirical meanings of fit.

Explicit Justification of the Specification of Fit

A corollary to the above issue is a call for researchers to explicitly justify their specification of fit within a particular research context. Random and convenient choice of statistical methods should be abandoned

with an explicit recognition that the research results are sensitive to this choice. As we expect that strategy researchers routinely demonstrate the link between conceptual definition and operational measures (Venkatraman & Grant, 1986), it should be that researchers justify not only the measures of their constructs, but also their specific scheme of fit between (or among) the constructs.

Specifically, this requires that empirical research studies discuss the rationale for their specification and demonstrate the correspondence between theory and statistical method(s). For example, Gupta and Govindarajan (1984) developed their hypothesis in such a way that they reflected the perspective of fit as moderation. However, one could well argue that the theoretical perspective of fit between strategy and managerial characteristics could also be operationalized within a matching perspective (which they implicitly invoke in their theoretical discussions supporting their hypotheses), as well as a mediational perspective (namely, managerial characteristics facilitate the translation of strategic decisions and choices to performance). Their empirical results would have been richer if they had argued for their choice by explicitly pitching the moderation perspective against relevant alternative perspectives.

A related question pertains to whether the results of an empirical study that adopts one of the perspectives (without discounting other relevant ones) are sensitive to the particular operationalization scheme. For example, is the empirical demonstration of the performance impacts of strategy-manager fit reported by Gupta and Govindarajan (1984) generalizable beyond the moderation perspective? What would happen if we test the same theoretical linkage using say, the matching and mediational perspectives. Similarly, can we generalize the results of Bourgeois (1985) beyond the 'difference-score' approach? Also, would Chakravarthy's (1987) results on the absence of performance impacts of tailoring strategic planning systems to

the context hold up when the contingent theory of planning system design be tested within the perspective of profile-deviation (i.e., perspective four)? Such questions are in the spirit of 'triangulation' that calls for testing theoretical relationships using multiple measures and multiple methods (Denzin, 1978; Jick, 1979), and are relevant since a general theoretical perspective of performance effects of structure-context fit was supported using some analytical perspectives and not others (see Drazin and Van de Ven, 1985; Joyce et. al., 1982). Similarly, the theory of performance impacts of environment--strategy coalignment was supported using sub-group analysis, reflecting the strength of moderation (Prescott, 1986), and with fit as profile-deviation (Venkatraman and Prescott, 1988), but not within a moderated regression perspective (Jauch et. al., 1980).

Multiple Specifications of Fit: A 'Triangulation-Trap?'

In the best spirit of triangulation, there exists a preference for the use of multiple specifications of fit within a single empirical study. Indeed, extant literature is unequivocal in this area. Tosi and Slocum (1984) in suggesting guidelines for contingency theory research noted: "Statistical techniques have frustrated researchers' attempts to test for the interaction effects being modeled because each technique has implied biases. Researchers need to compare the utility of each of these statistical technique using the same data set" (1984; p. 16; emphasis added). A similar recommendation comes from Van de Ven and Drazin (1985): ".....studies should be designed to permit comparative evaluation of as many forms of fit as possible.... (and) Examining multiple approaches to fit in contingency studies and relating the findings to unique sample characteristics can greatly aid the development of mid-range theories of what approach to fit applies where" (1985; pp. 358-360). Specifically, the use of multiple specifications enabled Drazin and Van de Ven (1985) to uncover insightful nuances of the

structural contingency theory that may not have been otherwise possible.

Philosophically, one can not quarrel with such recommendations. But, before we get carried away into testing our theoretical relationships with multiple perspectives within a single research study, we need to evaluate the appropriateness of the alternate perspectives to the theory and the research design that guided the data collection exercise. Not all theoretical statements are amenable to the six perspectives identified here. Similarly, measurement schemes may limit the use of some perspectives.

Operationally, there exists a danger of not obtaining convergence of results across multiple statistical tests. If one obtains converging results across multiple perspectives, evidence of 'robustness' is provided. However, the converse is not true. For example, given the same data set, Drazin and Van de Ven (1985) reported that their theory was supported using a 'systems' approach, but not an 'interaction' approach. In such a case, we need to evaluate whether the results reflect differential support for the competing theoretical perspectives or a fundamental nature of (mathematical and statistical) relationships among the statistical tests?

Thus, a relevant question is: given a (random) data set, what is the probability of accepting a theoretical relationship of performance impacts of fit across a subset of these perspectives that are comparable. Let us suppose that three different researchers are seeking to test the same underlying theory of performance impact of fit between two variables, (X), and (Z), with three different perspectives: the moderation perspective, the matching perspective, and the mediation perspective. Further let us suppose that they independently obtain a similar pattern of correlations among the three variables, X, Y, and Z. What is the probability that their results would converge irrespective of the specific values in the correlation matrices? Answers to this question explicate the fundamental nature of the relationships between and among these three perspectives that are

independent of the specific theory being tested; and they provide useful pointers on the appropriateness of generally pursuing multiple tests of fit. Until we show that there exists no a priori preference (bias) of one test, we should be cautious in following triangulation within a data-set, post-hoc.

An appropriate and efficient approach to answer this question is through a Monte Carlo simulation design that accomodates varying patterns of correlations among X, Y, and Z and performing the tests of convergence. I a separate technical note[6], I demonstrate that the probability of convergence across the three perspectives (moderation, matching, and mediation) is close to zero, implying that recommendations calling for post-hoc attempts (Tosi and Slocum, 1984) to assess triangulation is of limited use.

Longitudinal Operationalizations of Fit

Most (if not all) perspectives discussed in this paper have focused on static, cross-sectional approaches to the specification and testing of fit within strategy research. However, as Thompson noted, coalignment is a dynamic and never-ending task, whereby the organization is continually "shooting at a moving target of coalignment" (1967; p.234). According to this view, no organizational system is in a state of perfect dynamic coalignment, but every organization is moving towards this state. Several interesting theoretical issues are rooted in the dynamic perspective of fit, such as: forces explaining the organizational movement towards versus away from equilibrium (fit); short-term benefits of fit versus long-term benefits of fit; possible trade-offs between short-run fit versus long-term fit. While these are interesting theoretical issues, it is unclear whether the six perspectives

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[6] A separate note titled, "Testing the Concept of Fit in Strategy Research: The Triangulation-trap" is under preparation.

identified here are most appropriate for testing such issues or not. It is necessary to note that this paper has not treated this issue, but it recognizes that a promising area of research is the development of appropriate mechanisms to specify and test fit within a longitudinal perspective.

Summary

The general concept of fit is central to strategic management research. But, the progress in theory construction in this area is likely to be limited unless we seek to clarify the specific meaning of fit as used in various settings, develop strong linkage between verbalizations and statistical testing schemes, and test theoretical relationships using multiple comparable statistical schemes where necessary and feasible. Towards this end, this paper identified six different conceptualizations of fit within strategic management -- fit as moderation; fit as mediation; fit as matching; fit as gestalts; fit as profile-deviation; and fit as covariation. For each perspective, it discussed the various available statistical schemes to highlight the isomorphic nature of the link between theory and testing schemes; and demonstrated that the statistical methods are not freely interchangeable without confounding the underlying theoretical meaning of fit.

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Figure 1
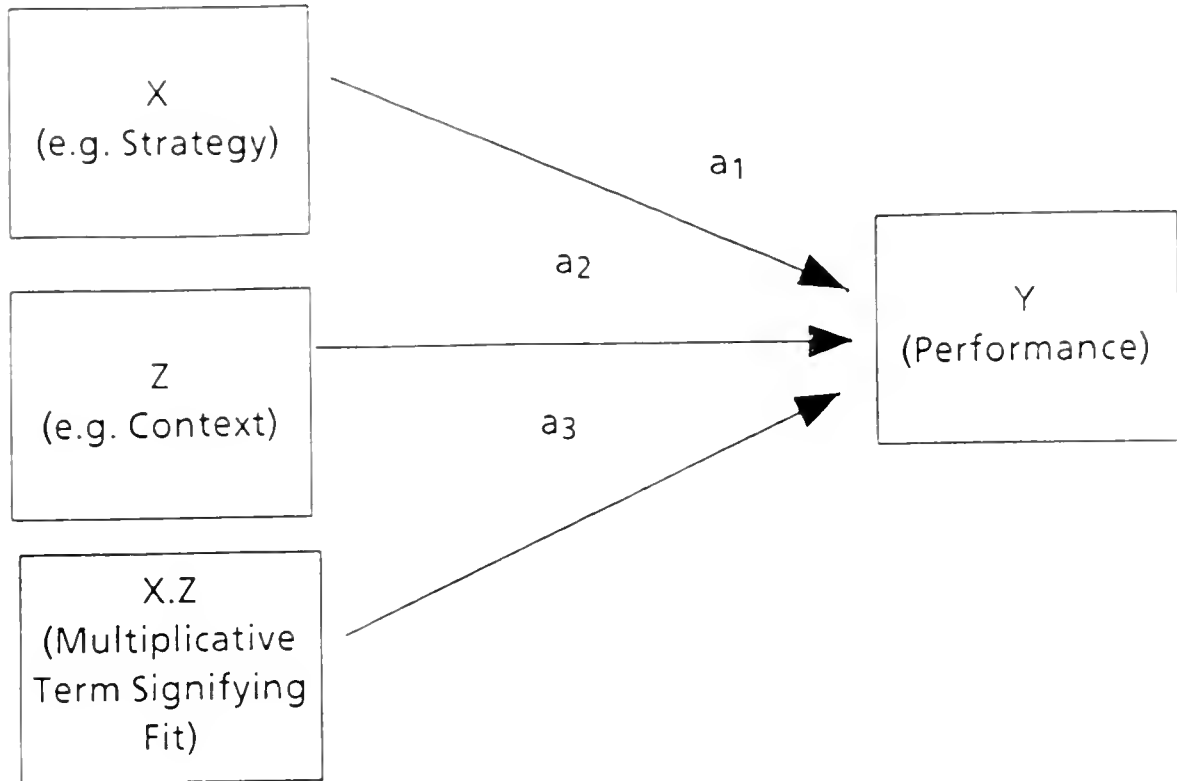
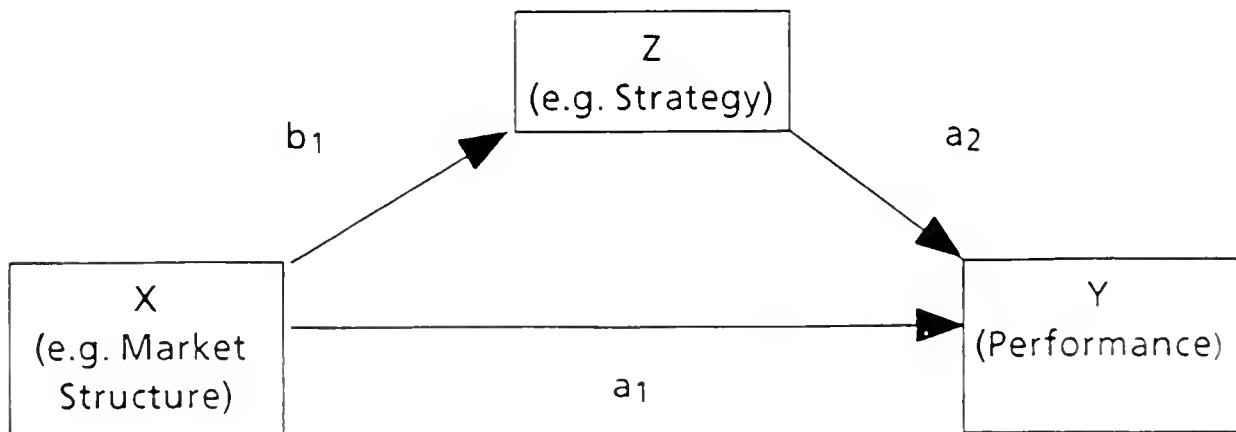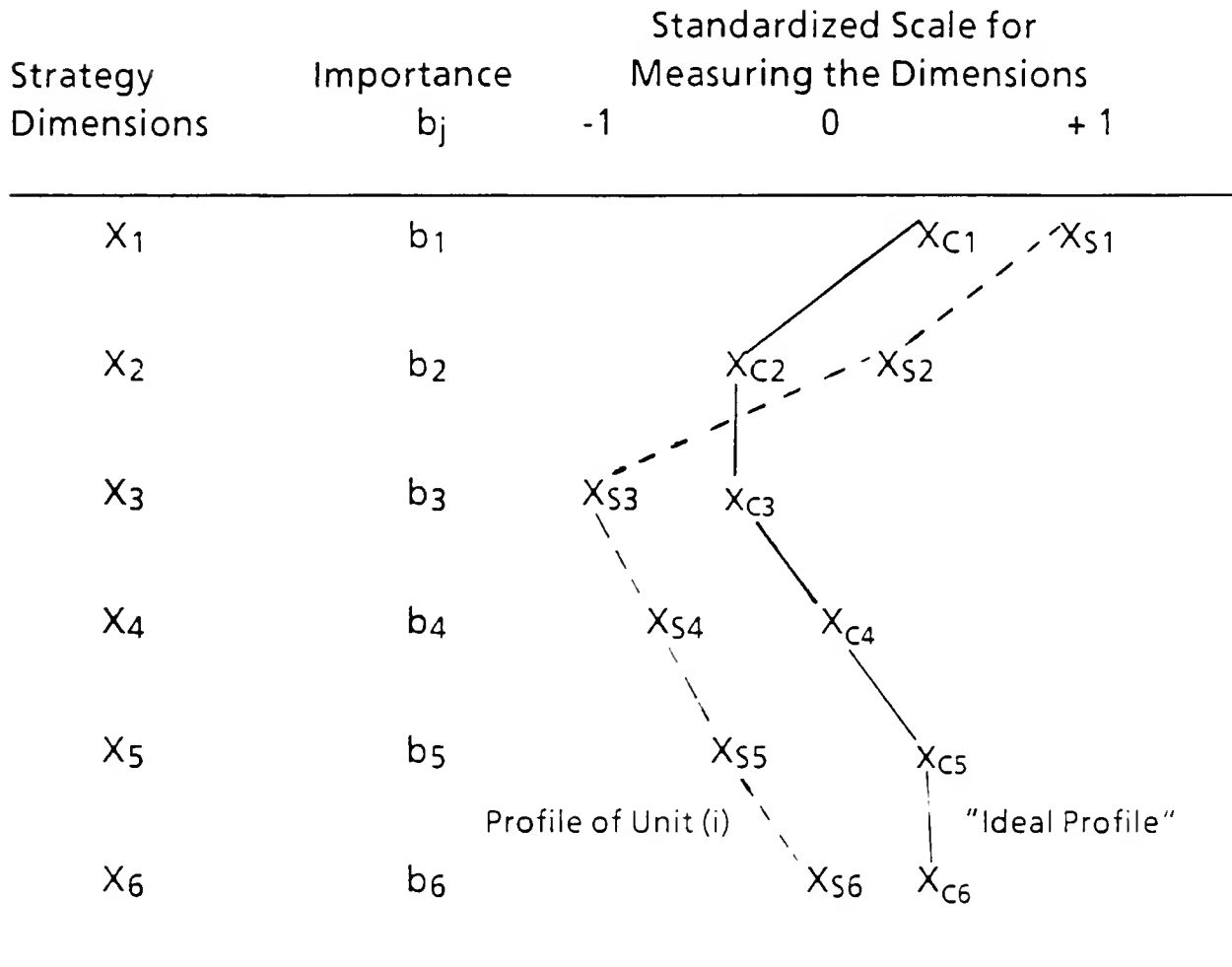## A Schematic Representation of Fit as Moderation

Figure 2
A Schematic Representation of Fit as Mediation

Figure 3
A Schematic Representation of Fit as Profile-Deviation

Strategy Dimensions	Importance b_j	Standardized Scale for Measuring the Dimensions		
		-1	0	+1

The measure of profile-deviation for unit (i) is calculated as follows:

$$PD = \sum_{j=1}^{6} (b_j(X_{sj} - X_{cj}))^2, \text{ where}$$
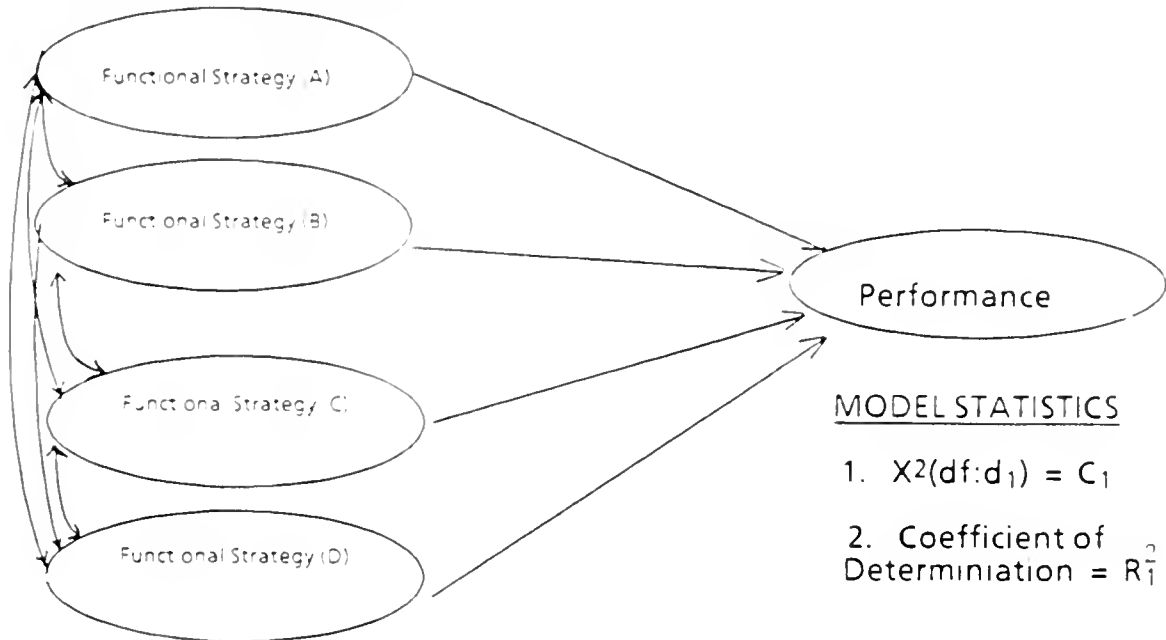
x_{sj} = The score for business unit (j) in the study sample.

x_{cj} = The score (average) for the calibration sample.
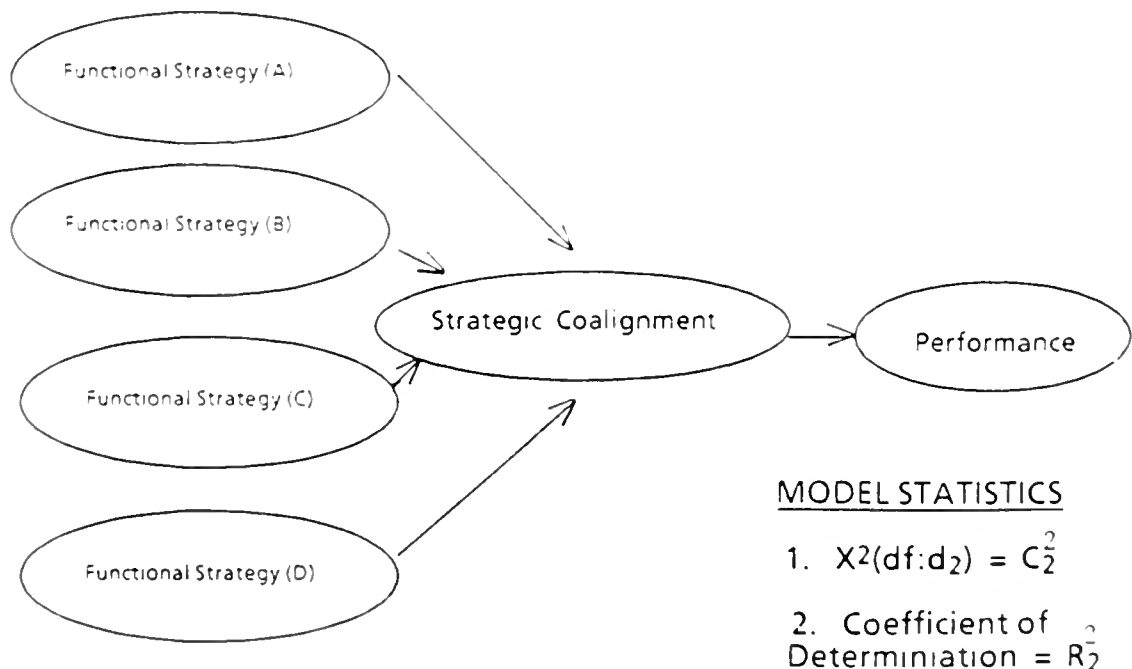
b_j = Standardized importance scores.

A Schematic Representation of Fit as Covariation Within a Confirmatory Factor Analytic Framework

A. DIRECT EFFECTS MODEL

MODEL STATISTICS

1. $X^2(df:d_1) = C_1$

2. Coefficient of Determination $= R_1^2$

B. FIT AS COVARIATION MODEL

MODEL STATISTICS

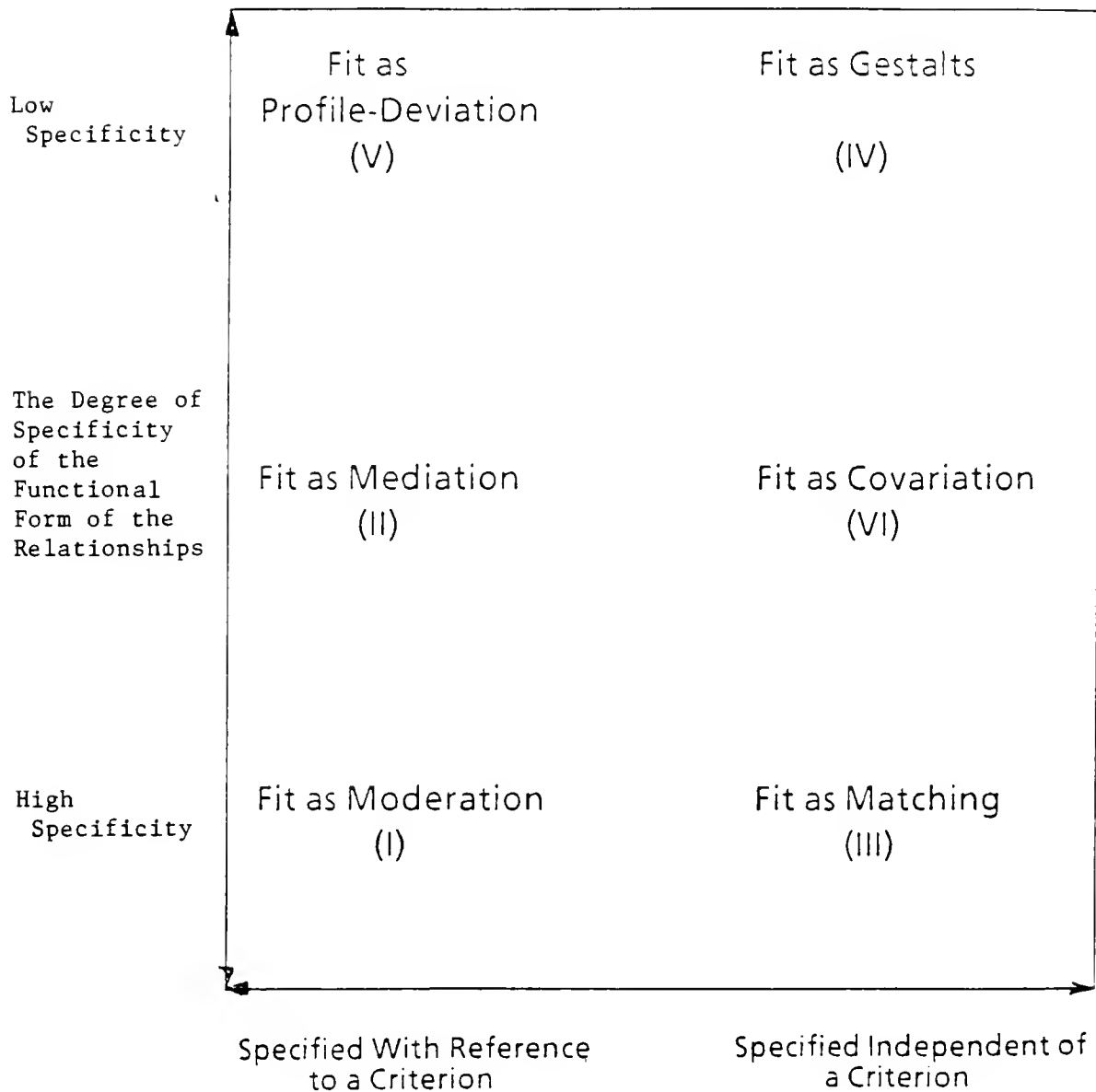1. $X^2(df:d_2) = C_2^2$

2. Coefficient of Determination $= R_2^2$

BASIS FOR TESTING THE EFFECTS OF FIT AS COVARIATION

1. Comparison of the Coefficients of Determination (R_2^2 versus R_1^2)

2. Calculation of the Target Coefficient $t = \dfrac{C_1}{C_2}$ and Interpreted in Terms of its Closeness to 1.0

Figure 5

Mapping The Six Perspectives
of Specifying and Testing Fit

Low
Specificity

Fit as
Profile-Deviation
(V)

Fit as Gestalts

(IV)

The Degree of
Specificity
of the
Functional
Form of the
Relationships

Fit as Mediation
(II)

Fit as Covariation
(VI)

High
Specificity

Fit as Moderation
(I)

Fit as Matching
(III)

Specified With Reference
to a Criterion

Specified Independent of
a Criterion

The Treatment of Fit

Table 1: The Concept of Fit in Strategy Research: A Comparison of Alternate Perspectives

Perspectives / Key Characteristics	Fit as Moderation	Fit as Mediation	Fit as Matching	Fit as Gestalt	Fit as Profile Deviation	Fit as Covariation
The underlying conceptualization of fit	Interaction	Intervention	Matching	Internal Congruence	Adherence to a Specified Profile	Internal Consistency
Verbalization of a strategy proposition (Illustrative)	The interactive effects of strategy and managerial characteristics has implications for performance	Market share is a key intervening variable between strategy and performance	The match between strategy and structure enhances administrative efficiency	The nature of internal congruence among a set of strategic variables differs across "high" and "low" performance businesses	The degree of adherence to a specified profile has significant effect on performance	The degree of internal consistency in resource allocations has significant effect on performance
Number of variables in the specification of fit	Two	Two to Multiple	Two	Multiple	Multiple	Four* to Multiple
Analytical scheme(s) for testing fit	Analysis of variance, Moderated regression analysis, Subgroup Analysis,	Path analysis	ANOVA, Deviation Scores, Residual Analysis	Numerical Taxonomical Methods	The calculation of deviation as an Euclidian distance in an n dimensional space	Second order factor analysis (exploratory or confirmatory)
Measure of Fit	Statistical Derivation	Statistical Derivation	Interval-level Measure	Ordinary Interval Measure	Internal Measure	Internal Measure
Illustrative References	Gupta and Govindarajan (1984) Prescott (1986)	Prescott (1986), and Venkatraman (1986)	Chandler (1962) Bourgeois (1985) Joyce, Slocum & Von Glinow (1986) Dewar and Werbel (1979)	Miller and Friesen (1984), Hambrick (1984)	Van de Ven and Drazin (1985) Venkatraman and Prescott (1987)	Venkatraman (1986) Walker and Thietart (1986)

* Identification Purposes

Date Due